PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors:	Oleg Kiselev, Ronald S. Karr		
Assignee:	VERITAS Operating Corporation		
Title:	A METHOD OF DATA CACHING IN MIRRORED STORAGE		
Application No.:	10/749,862	Filing Date:	December 31, 2003
Examiner:	Jared Ian Rutz	Group Art Unit:	2187
Docket No.:	VRT0058P1US	Confirmation No.:	6313

Austin, Texas
June 19, 2007

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AMENDED APPEAL BRIEF IN RESPONSE TO NOTIFICATION OF NON-COMPLIANT APPEAL BRIEF (37 CFR 41.37)

Dear Sir:

On April 12, 2007, Appellant submitted an Appeal Brief in response to the Notice of Panel Decision from Pre-Appeal Brief Review dated March 12, 2007. Deposit account No. 502306 was charged $500.00 for the fee associated with the appeal brief.

Appellant received a notice of non-compliance with the requirements of 37 CFR 41.37(c)(1)(iii). The notice indicates the previously filed Appeal Brief does not identify the appealed claims. Appellant submits this amended brief to correct the deficiencies noted in the notice.

REAL PARTY IN INTEREST

The real party in interest on this appeal is the assignee, Veritas Operating Corporation as named in the caption above.

RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences related to this application.

STATUS OF CLAIMS

Claims 1, 5, 9, 13, 14, and 18 stand rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over Claims 1, 9, and 12 of U.S. Patent No. 7,028,156 (the 156 Patent) in view of U.S. Patent Application Publication No. 2004/0205298 filed by Bearden et al. (Bearden).

Claims 1-6, 9-11, 13, and 18 were provisionally rejected on the ground of a non-statutory double patenting over Claims 1-4, 8, 14-17, and 23 of copending Application 10/742,129 (now U.S. Patent 7,177,993 or the 993 Patent) in view of Bearden. Appellants will presume this rejection is no longer provisional.

Claims 1, 5, 6, 9, and 18 were provisionally rejected on the ground of non-statutory double patenting over Claims 24, 25, 32, and 41 of copending Application No. 11/242,216 (now U.S. Patent 7,096,332 or the 332 Patent). Appellants will presume this rejection is no longer provisional. Claims 24, 25, 32, and 41 of copending Application No. 11/242,216 correspond to Claims 2, 4, 11, and 19, respectively, of the 332 Patent.

Claims 7, 8, 12, 15, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

STATUS OF AMENDMENTS

No amendments were filed subsequent to the final rejection of August 15, 2006.

SUMMARY OF CLAIMED SUBJECT MATTER

The invention is as set forth in the claims. To summarize the invention without intending to limit or otherwise affect the scope of the claims, the invention as set forth by independent Claim 1 relates to a method. The method includes receiving a first read request from a computer system. *See, e.g.*, paragraph 22, lines 3-5, and; Figure 4, act 110. In response to receiving the first read request, data is read from the first mirror of a data volume. *See, e.g.*, paragraph 22, lines 9-10, and; Figure 4, act 114. Further in response to receiving the first read request, data is read from a second mirror of the data volume. *See, e.g.*, paragraph 22, lines 9-10, and; Figure 4, act 114. Data read from the first mirror is returned to the computer system. *See, e.g.*, paragraph 22, lines 11-12, and; Figure 4, act 116. Data read from the second mirror, however, is stored into a cache memory. *See, e.g.*, paragraph 22, lines 14-17, and; Figure 4, act 126. Thereafter, a second request is received from the computer system, wherein the second read request is received subsequent to the first read request, and wherein the first and second read requests seek the same data. *See, e.g.*, paragraph 24, lines 1-3. In response to receiving the second read request, data stored in the cache memory is returned to the computer system. *See, e.g.*, paragraph 25, lines 3-4, and; Figure 4, act 130.

The invention as set forth in independent Claim 9 relates to a computer readable medium comprising instructions executable by a first computer system, wherein the first computer system performs a method in response to executing the instructions. *See, e.g.*, paragraph 15, lines 1-3. In one embodiment, the method includes receiving a first read request from a computer system. *See, e.g.*, paragraph 22, lines 9-10, and; Figure 4, act 114. In response to receiving the first read request, data is read from a first mirror of a data volume. *See, e.g.*, paragraph 22, lines 9-10, and; Figure 4, act 114. Also in response to receiving the first read request, data is read from a second mirror of the data volume. *See, e.g.*, paragraph 22, lines 9-10, and; Figure 4, act 114. Data read from the first mirror is returned to the computer system. *See, e.g.*, paragraph 22, lines 11-12, and; Figure 4, act 116. In contrast, the data read from the second mirror is stored into a cache memory. *See, e.g.*, paragraph 22, lines 14-17, and; Figure 4, act 126. A second read request is received from the computer system, wherein the second read request is received subsequent to the first read request, and wherein the first and second read request seek the

same data. *See, e.g.*, paragraph 24, lines 1-3. In response to receiving the second read request, data stored in the cache memory is returned to the computer system. *See, e.g.*, paragraph 25, lines 3-4, and; Figure 4, act 130.

The invention as set forth by independent Claim 18 relates to a data processing system comprising a first computer system coupled to a memory system. *See, e.g.*, paragraph 13, lines 4-5, and; Figure 2, post node 42 coupled to storage systems 44 and 46, which in turn include memories 54 and 56, respectively. The memory system stores a data volume comprising a first mirror and a second mirror. *See, e.g.*, paragraph 16, lines 1-5. The first computer system comprises a memory for storing instructions executable by the first computer system, wherein the first computer system implements a method in response to executing the instructions. *See, e.g.*, paragraph 15, lines 1-3. The method includes receiving a first read request from a computer system. *See, e.g.*, paragraph 22, lines 3-5, and; Figure 4, act 110. Data is read from the first and second mirrors in response to receiving the first read request. *See, e.g.*, paragraph 22, lines 11-12, and; Figure 4, act 116. Data read from the first mirror is returned to the computer system. *See, e.g.*, paragraph 22, lines 11-12, and; Figure 4, act 116. However data read from the second mirror is stored into a cache memory. *See, e.g.*, paragraph 22, lines 14-17, and; Figure 4, act 126. A second read request is received from the computer system, wherein the second read request is received subsequent to the first read request, and wherein the first and second read request seek the same data. *See, e.g.*, paragraph 24, lines 1-3. In response to receiving the second read request, data stored into the cache memory is returned to the computer system. *See, e.g.*, paragraph 25, lines 3-4, and; Figure 4, act 130.

ISSUES TO BE REVIEWED ON APPEAL

I. Claims 1, 5, 9, 13, 14, and 18 stand rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over Claims 1, 9, and 12 of the 156 Patent in view of Bearden.

II. Claims 1-6, 9-11, 13, and 18 stand rejected on the ground of non-statutory double patenting over Claims 1-4, 8, 14-17, and 23 of the 993 Patent in

ARGUMENTS

I. Rejection of Claims 1, 5, 9, 13, 14, and 18 Under the Ground of Non-Statutory Obviousness-type Double Patenting over Claims 1, 9, and 12 of the 156 Patent in view of Bearden

Appellants note the Final Office Action used form paragraph 8.36 (MPEP 804.B.II) in rejecting independent Claims 1, 9, and 18 on the ground of non-statutory obviousness-type double patenting over claims of the 156 Patent in view of Bearden. *See* Final Office Action page 2. Note 3 from form paragraph 8.36 recites:

> This form paragraph may be used where the prior invention is claimed in a patent which is:
>
> (a) by the same inventive entity, or
>
> (b) by a different inventive entity and is commonly assigned even though there is no common inventor, or
>
> (c) not commonly assigned but has at least one common inventor, or
>
> (d) made as a result of activities undertaken within the scope of a joint research agreement.

See MPEP 804.II.B, form paragraph 8.36, Note 3. Appellants respectfully submit the use of Bearden in providing the non-statutory obviousness-type double patenting rejection as to these claims is inappropriate since there is no evidence to suggest that Bearden has the same inventive entity, is commonly assigned, has at least one common inventor, or was made as a result of activities undertaken within the scope of a joint research agreement. Should the Examiner have evidence supporting a contention otherwise, Appellants respectfully request the Examiner provide that evidence. For at least these reasons,

Appellants assert independent Claims 1, 9, and 18 should not be rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims of the 156 Patent in view of Bearden.

Notwithstanding the improper use of Bearden in rejecting the independent claims, Appellants assert the Final Office Action has failed to establish a *prima facie* basis for rejecting independent claims 1, 9, and 18 as being obvious over claims of the 156 Patent in view of Bearden. To establish a *prima facie* basis, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See*, MPEP 2142. The Final Office Action admits the limitation "returning data stored in the cache memory in response to receiving the second read request" of independent Claims 1, 9 and 18, is not found in the corresponding 156 Patent claims. However, the Final Office Action argues this missing limitation can be found in paragraph [0029] of Bearden. *See* Final Office Action claim chart entries on pages 4, 5, and 7. Paragraph [0029] of Bearden does not teach returning data stored in the cache memory in response to receiving the second read request. Rather, paragraph [0029] of Bearden teaches returning data stored in the cache memory when the data is requested. Independent Claims 1, 9, and 18 make clear that the "second request" is received from the same computer system from which the "first request" was received, and that the first and second requests seek the same data. Thus, independent Claims 1, 9, and 18 define a relationship between the first and second requests. No such relationship is alleged to exist between the "first request" in claims of the 156 Patent and the request of paragraph [0029] of Bearden. Accordingly, Appellants assert that the combination of the cited claims of the 156 Patent and the cited sections of Bearden do not teach or fairly suggest all the limitations of independent Claims 1, 9, and 18 as is required by MPEP 2142 to establish a *prima facie* basis.

The remaining claims depend from independent Claims 1, 9, 18. Because independent Claims 1, 9, 18 are patentably distinguishable, it follows that remaining dependent claims are likewise patentably distinguishable.

II. The Rejection of Claims 1-6, 9-11, 13 and 18 on the Ground of Non-Statutory Double Patenting Over Claims 1-4, 8, 14-17, and 23 of the 993 Patent in View of Bearden

As noted above, the Final Office Action provisionally rejected Claims 1-6, 9-11, 13 and 18 on the ground of a non-statutory double patenting over Claims 1-4, 8, 14-17, and 23 of copending Application 10/742,129 in view of Bearden. Application 10/742,129 has subsequently issued into U.S. Patent 7,177,993 (the 993 Patent). For the purposes of this appeal, Appellants will presume the "provisional" rejection has been converted into an actual rejection.

Appellants note the Final Office Action used form paragraph 8.37 (MPEP 804.B.II) in rejecting independent Claims 1, 9, and 18 on the ground of non-statutory double patenting over claims of the 156 Patent in view of Bearden. *See* Final Office Action page 2. Note 3 from form paragraph 8.37 recites:

> This form paragraph may be used where the conflicting claims are in a copending application, that is:
>
> (a) by the same inventive entity, or
>
> (b) commonly assigned even though there is no common inventor, or
>
> (c) not commonly assigned but has at least one common inventor, or
>
> (d) made as a result of activities undertaken within the scope of a joint research agreement.

See MPEP 804.II.B (form paragraph 8.37, Note 3). Form paragraph 8.36 provides the same notes. Appellants respectfully submit that the use of Bearden in providing the provisional non-statutory obviousness-type double patenting rejections is inappropriate since there is no evidence to suggest that Bearden has the same inventive entity, is commonly assigned, has a common named inventor, or is made as a result of activities undertaken within the scope of joint research agreements. For at least these reasons, Appellants respectfully submit that the rejection of Claims 1, 9, and 18 is improper.

Notwithstanding the improper use of Bearden in rejecting the independent claims, Appellants assert the Final Office Action has failed to establish a *prima facie* basis for rejecting independent claims 1, 9, and 18 as being obvious over claims of the 993 Patent

in view of Bearden. The Final Office Action argues independent claims 1, 9, and 18 differ from independent Claims 1, 14, and 23, respectively, of the 993 Patent in that the instant application performs pre-fetching of the data stored in the second mirror when the first read request is received and returns the data stored in the cache when the second read request is received. The Final Office Action argues Bearden teaches the use of pre-fetching data that is likely to be requested by a host computer, citing paragraph [0004] in support thereof. *See,* Final Office Action, page 8. Then, the Final Office Action asserts it would have been obvious to pre-fetch the data stored in the second mirror and store it in a cache memory. *See,* Final Office Action, page 9. The Final Office Action provides no basis for this last assertion. Independent claims 1, 9, and 18 recite reading data from the first and second mirrors in response to receiving the first read request, and this limitation is not taught or fairly suggested in independent claims 1, 14, and 23 of the 993 Patent or in paragraph [0004] of Bearden. Accordingly, Appellants assert that the combination of the cited 993 Patent claims and the cited sections of Bearden do not teach or fairly suggest all the limitations of independent Claims 1, 9, and 18 as is required by MPEP 2142 to establish a *prima facie* basis.

The remaining claims depend from independent Claims 1, 9, 18. Because independent Claims 1, 9, 18 are patentably distinguishable, it follows that remaining dependent claims are likewise patentably distinguishable.

CONCLUSION

For the above reasons, Appellant respectfully requests that the Board reverse the rejections.

Respectfully submitted,

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CLAIMS APPENDIX

1. (Original) A method comprising:

receiving a first read request from a computer system;

reading data from a first mirror of a data volume in response to receiving the first read request;

reading data from a second mirror of the data volume in response to receiving the first read request;

returning the data read from the first mirror to the computer system;

storing the data read from the second mirror into a cache memory;

receiving a second read request from the computer system, wherein the second read request is received subsequent to the first read request, and wherein the first and second read requests seek the same data;

returning data stored in the cache memory in response to receiving the second read request.

2. (Original) The method of claim 1 further comprising:

comparing an identification of data sought by the first read request with data identifications stored in a history of read requests in memory;

wherein data is read from the data volume in response to determining that the identification of data sought by the first read request does not compare equally with at least one data identification stored in the history of read requests.

3. (Original) The method of claim 2 further comprising creating a new entry in the history of read requests, wherein the entry comprises the identification of data sought by the first read request and the time the first request was received.

4. (Original) The method of claim 3 further comprising;

comparing the identification of data sought by the second read request with data identifications stored in the history of read requests;

wherein data is returned from the cache memory in response to determining that the identification of data sought by the second read request compares equally with the data identification of the new entry.

5. (Original) The method of claim 1 further comprising comparing time T1 with time T2, wherein time T1 is the time when the first read request was received, and wherein time T2 is the time when the second read request was received.

6. (Original) The method of claim 5 further comprising returning the data stored in the cache memory in response to receiving the second request only if time T2 occurs within a predetermined amount of time after T1.

7. (Original) The method of claim 5 further comprising:

the computer system processing the data read from the first mirror;

the computer system generating the second read request in response to determining that the data read from the first mirror is corrupted.

8. (Original) The method of claim 1 further comprising comparing the data read from the first and second mirrors wherein the data read from second mirror is stored into the cache memory if the data read from the first and second mirrors do not compare equally.

9. (Original) A computer readable medium comprising instructions executable by a first computer system, wherein the first computer system performs a method in response to executing the instructions, the method comprising:

receiving a first read request from a computer system;

reading data from a first mirror of a data volume in response to receiving the first read request;

reading data from a second mirror of the data volume in response to receiving the first read request;

returning the data read from the first mirror to the computer system;

storing the data read from the second mirror into a cache memory;

receiving a second read request from the computer system, wherein the second read request is received subsequent to the first read request, and wherein the first and second read requests seek the same data;

returning data stored in the cache memory in response to receiving the second read request.

10. (Original) The computer readable medium of claim 9 wherein the method further comprises:

comparing an identification of data sought by the first read request with data identifications stored in a history of read requests in memory;

wherein data is read from the data volume in response to determining that the identification of data sought by the first read request does not compare equally with at least one data identification stored in the history of read requests.

11. (Original) The computer readable medium of claim 10 further comprising creating a new entry in the history of read requests, wherein the entry comprises the identification of data sought by the first read request.

12. (Original) The computer readable medium of claim 11 further comprising;
comparing the identification of data sought by the second read request with data identifications stored in the history of read requests;
wherein data is read from the cache memory in response to determining that the identification of data sought by the second read request compares equally with the data identification of the new entry.

13. (Original) The computer readable medium of claim 9 further comprising comparing time T1 with time T2, wherein time T1 is the time when the first read request was received, and wherein time T2 is the time when the second read request was received.

14. (Original) The computer readable medium of claim 13 further comprising reading the data stored in the cache memory in response to receiving the second request only if time T2 occurs within a predetermined amount of time after T1.

15. (Original) The computer readable medium of claim 13 further comprising:
the computer system processing the data read from the first mirror;
the compute system generating the second read request in response to determining that the data read from the first mirror is corrupted.

16. (Original) The computer readable medium of claim 9 further comprising:
comparing the data read from the first and second mirrors wherein the data read from second mirror is stored into the cache memory if the data read from the first and second mirrors do not compare equally.

17. (Cancelled)

18. (Original) A data processing system comprising;

a first computer system coupled to a memory system, wherein the memory system stores a data volume comprising a first mirror and a second mirror, wherein the first computer system comprises a memory for storing instructions executable by the first computer system, wherein the first computer system implements a method in response to executing the instructions, the method comprising:

receiving a first read request from a computer system;

reading data from the first mirror in response to receiving the first read request;

reading data from the second mirror of the data volume in response to receiving the first read request;

returning the data read from the first mirror to the computer system;

storing the data read from the second mirror into a cache memory;

receiving a second read request from the computer system, wherein the second read request is received subsequent to the first read request, and wherein the first and second read requests are for the same data;

returning data stored in the cache memory in response to receiving the second read request.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None